FRESHWATER ALGAE OF DAVANAGERE AND RAICHUR OF KARNATAKA STATE, INDIA[1]

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(*With nine plates*)

In continuation of the studies made on fresh water algae of Karnataka, the present paper deals with the fresh water algae from Davanagere. The diatoms which were excluded in the earlier report on the algae of Yaragera lake, Raichur (Bharati and Bongale 1975) have also been included in this paper.

Algae were collected from Bathi lake of Davanagere in February 1975 and preserved in 4% formaldehyde for further observations. Camera lucida sketches were made for the identification.

Cyanophyceae

Gloeothece membranacea (Rabenh.) Bornet (Pl. I, Fig. 1) Desikachary P. 128. Cells without sheath 3.5 to 5.0 μ broad, 5.0 to 8.5 μ long, bluegreen, sheath unlike the type is yellow to brownish.

Aphanocapsa banaresensis Bharadwaja (Pl. I, Fig. 2). Desikachary p. 133, Pl. 22, Fig. 8. Cells bluegreen, granulated, 4.5 to 6.0 μ diameter. Differs from the type in being much smaller and also sheath not hyaline, but yellowish.

Myxosarcina burmensis Skuja (Pl. I, Fig. 3.) Desikaehary p. 178, Pl. 32, figs. 20-22. Cells elosely packed, bluegreen, 1.5 to 2.0 μ in diameter, little smaller than the type. Colonies very small 20-25 μ in diameter.

Spirulina laxissima West, G. S. (Pl. I, fig. 4.) Desikachary p. 196, Pl. 36, fig. 5. Trichome bluegreen, nongranular, 2.5 to 3.0 μ broad, spirals upto 10 μ broad, 12 to 20 μ distant from each other. Trichomes broader than the type.

Oscillatoria curviceps Ag. ex Gomont (Pl. I, fig. 5.) Desikachary p. 209, Pl. 38, fig. 2. Thallus bluegreen to brown, trichomes bent at the apices, not spirally coiled, 9.0 to 12.0 μ broad, upto 1/3 as long as broad, cross walls very thick, end cell rounded. Little smaller than the type.

O. irrigua (Kutz.) Gomont (Pl. I, fig. 6.) Desikachary p. 224, Pl. 42, figs. 7, 9. Trichomes 3.5 to 5.0 μ broad. Cells nearly as long as broad, granulated. Much smaller than the type.

O. obscura Bruhl et Biswas (Pl. I, fig. 7). Desikachary p. 207. Trichomes 4.0 to 5.0 μ broad. Cells granulated, unlike the type trichome is not attenuated at the apex.

O. princeps Vaucher ex Gomont (Pl. I, fig. 8 a, b.) Desikachary p. 210, Pl. 37, figs. 1, 10, 11, 13, 14. Trichomes bluegreen, slightly attenuated and bent at the apices, cells 1/8 to $\frac{1}{4}$ as long as broad, end cells flatly rounded, slightly eapitate with thickened outer membrane 12 to 35 μ broad.

O. subtilissima Kutz. (Pl. I, fig. 9) Desikachary p. 215. Cells bluegreen, granulated,

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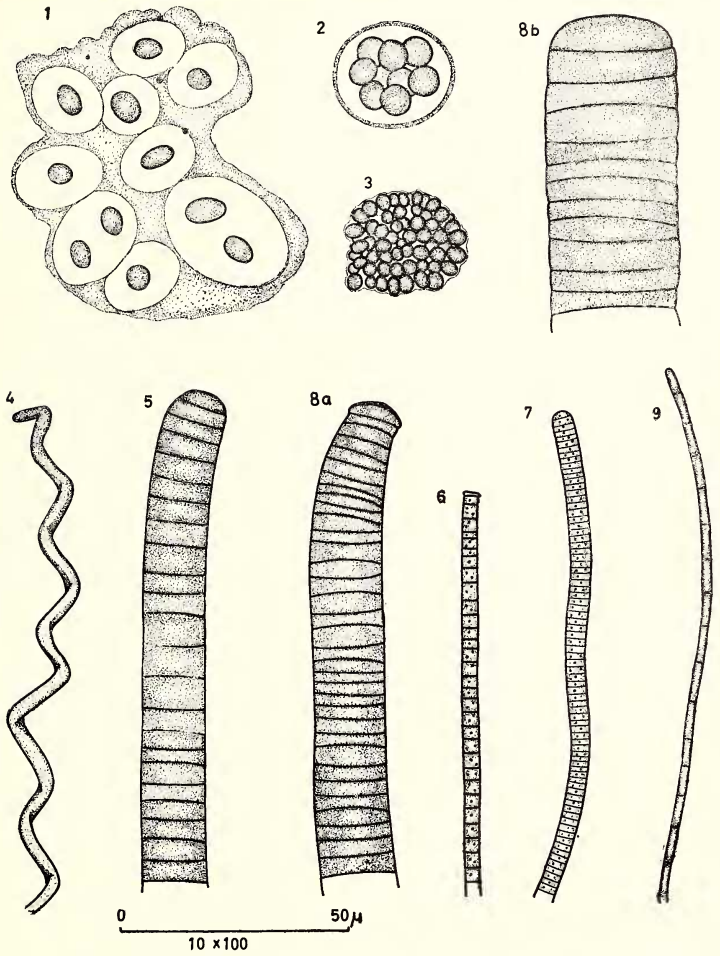
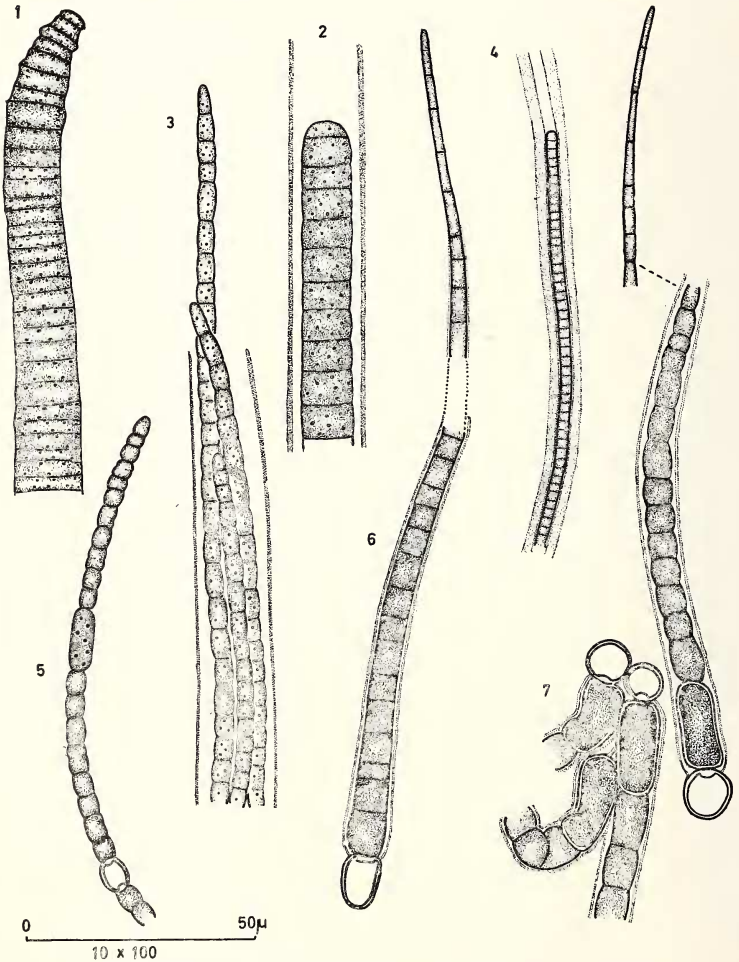
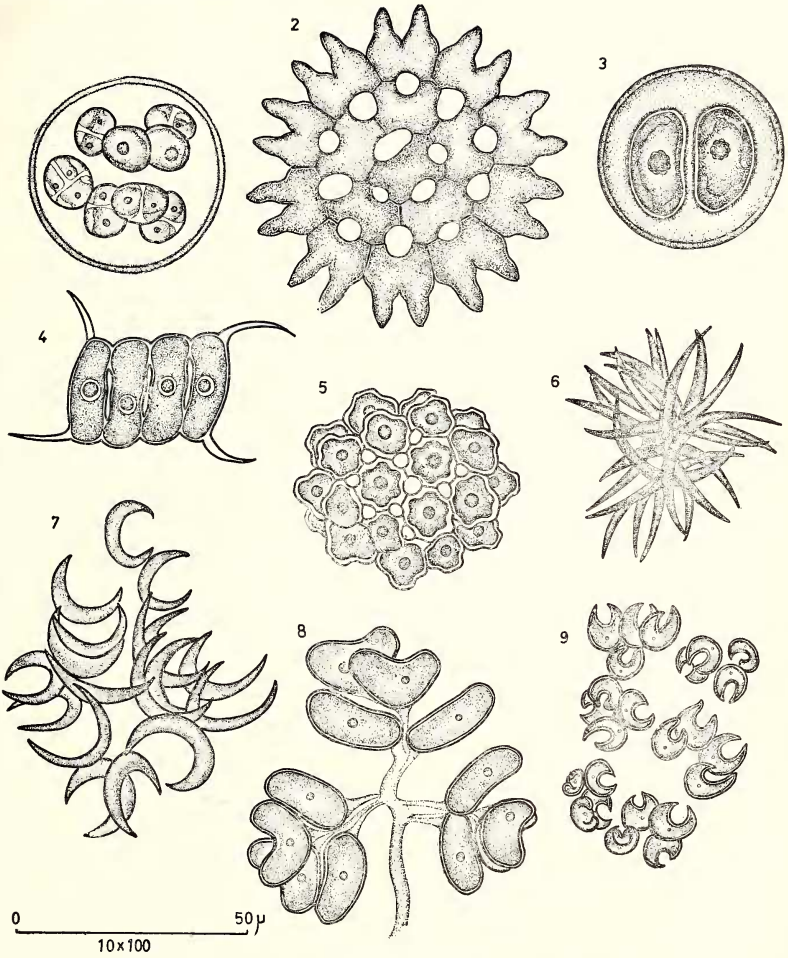


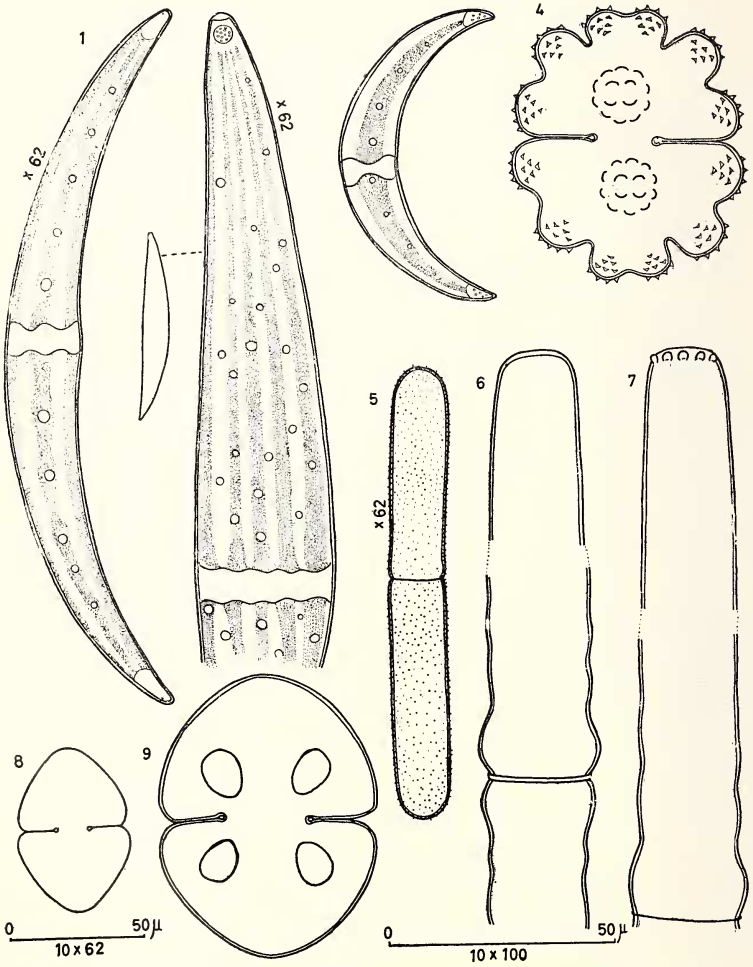
Figs. 1-9: 1. *Gloeothece membranacea* (Rabenb.) Bornet; 2. *Aphanocapsa banaresensis* Bharadwaja; 3. *Myxosarcina burmensis* Skuja; 4. *Spirulina laxissima* West, G.S.; 5. *Oscillatoria curviceps* Ag. ex Gomont; 6. *Oscillatoria irrigua* (Kutz.) Gomont; 7. *Oscillatoria obscura* Bruhl et Biswas; 8a, b. *Oscillatoria princeps* Vaucher ex Gomont; 9. *Oscillatoria subtilissima* Kütz.



Figs. 1-7: 1. *Phormidium uncinatum* (Ag.) Gomont; 2. *Lyngbya hieronymusii* Lemn.; 3. *Microcoleus subtorulosus* (Breb.) Gomont; 4. *Phormidium mucosum* Gardner; 5. *Anabaena laxa* (Rabenh.); 6. *Calothrix weberi* Schmidle; 7. *Calothrix bharadwajae* De Toni.



Figs. 1-9. 1. *Oocystis borgei* Snow; 2. *Pediastrum duplex* var. *reticulatum* Lagergheim; 3. *Nephrocytium obesum* W. et G. S. West; 4. *Scenedesmus perforatus* Lemmermann; 5. *Coelastrum cambricum* var. *intermedium* (Bohlin) G. S. West.; 6. *Ankistrodesmus fulcatus* var. *radiatus* (Chodat) Lemmermann; 7. *Selenastrum gracile* Reinsch; 8. *Dimorphococcus lunatus* A. Braun; 9. *Kirchneriella lunaris* (Kirchner) Moebius.



Figs. 1-9: 1. *Closterium leibleinii* Kützing; 2. *Closterium lunula* (Muller) Nitzsch.; 3. *Closterium venus* (Kütz.) Brébisson; 4. *Euastrum spinulosum* Delp.; 5. *Penium margaritaceum* (Ehrenb.) Bréb.; 6. *Pleurotaenium trabecula* (Ehrenbg.) Nag.; 7. *Pleurotaenium ehrenbergii* (Bréb.) De Bary; 8. *Cosmarium granatum* Bréb.; 9. *Cosmarium lundellii* var. *circulare* (Reinsch) Krieg.

1.5 to 2.0 μ broad, 3-4 times as long as broad, slightly broader than type.

Phormidium mucosum Gardner (Pl. II, fig. 4) Desikachary P. 265, Pl. 43, figs. 6, 7. Sheath mucilaginous, colourless, 7.5 to 8.0 μ broad. Trichomes bluegreen, cells nongranulated, more or less as long as broad, 2.0 to 3.0 μ broad.

P. uncinatum (Ag.) Gomont (Pl. II, fig. 1) Desikachary p. 276, Pl. 43, figs. 1, 2. Cells yellowish bluegreen, 6 to 15 μ broad cross walls granulated, trichomes attenuated at the apices. End cell round or flattened conical capitate. Cells $\frac{1}{4}$ to $\frac{1}{2}$ as long as broad, larger than the type.

Lyngbya hieronymusii Lemn. (Pl. II, fig. 2). Desikachary p. 297; Pl. 48, fig. 4. Filaments 15 to 18 μ broad, sheath firm, yellowish to colourless. Cells bluegreen granulated, sometimes at the cross walls, 11 to 12.5 μ broad, $\frac{1}{2}$ to as long as broad, longer than the type.

Microcoleus subtorulosus (Breb.) Gomont (Pl. II, fig. 3) Desikachary p. 345, Pl. 56, figs. 8, 9. Many trichomes enclosed in a colourless to brownish gelatinous sheath. Cells granulated, bluegreen, 2.5 to 3.5 μ broad, 3.5 to 7.0 μ long, smaller than the type.

Anabaena laxa (Rabenh.) (Pl. II, fig. 5.) Desikachary p. 413. Trichome 3.0 to 4.0 μ broad, straight to slightly curved. Cells mostly barrel shaped with one or two granules, 4.5 to 5.5 μ broad, apical cell rounded little attenuated. Heterocyst spherical 5.0 to 6.0 μ broad and upto 7.0 μ long. Spore away from the heterocyst, 5.0 to 6.5 broad and upto 15 μ long.

Calothrix bharadwajae De Toni, J. (Pl. II, fig. 7). Desikachary p. 526, Pl. 112, fig. 3. Filaments grouped together, sheath distinct, hyaline. Trichomes constricted at the cross walls, tapering into a long hair. Cells barrel shaped 5.0 to 6.0 μ broad, upto 9.0 μ long. Heterocysts spherical, upto 8.5 μ broad. Spores cylindrical 8.0 to 9.0 μ broad and upto 22.0 μ long.

C. weberi Schmidle (P. II. fig. 6). Desikachary p. 540. Filaments unbranched, upto 9.0 μ broad, ending into a long hair. Sheath hyaline, close to the trichome. Cells half to 2-3 times as long as broad, not constricted at the cross walls. Heterocysts spherical to slightly conical, 7.0 to 8.0 μ broad, upto 12.0 μ long.

Chlorophyceae

Pediastrum duplex var. **reticulatum** Lagergheim (Pl. III, fig. 2.). Philipose 124, fig. 43 g. Cells 10 to 18.0 μ in diameter, Colonies 16 to 32 celled, 70 to 90 μ in diameter, larger than the type.

Oocystis borgei Snow (Pl. III, fig. 1) Philipose p. 183, fig. 93. Cells 7 to 8 μ broad and 8 to 10.0 μ long. Colonies 4-8 celled 35 to 40 μ in diameter. Cells smaller than type.

Nephrocytium obesum W. et G. S. West (Pl. III, fig. 3.) Philipose 191, fig. 106. Cells 10 to 11 μ broad, 18 to 20 μ long. Colonies 30 to 35 μ in diameter. Much smaller than the type.

Dimorphococcus lunatus A. Braun (Pl. III, fig. 8). Philipose p. 205, fig. 115. Cells 5 to 10 μ broad, 15 to 20 μ long. Colonies upto 95 μ in diameter.

Ankistrodesmus falcatus var. **radiatus** (Chodat) Lemmermann (Pl. III, fig. 6.) Philipose p. 213, fig. 121 d. Cells 2.0 to 2.5 μ broad, 25 to 40 μ long, shorter than the type.